

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 10-13 are pending in this application. Claim 10 was rejected under 35 U.S.C. § 102(e) as anticipated by U.S. patent 6,096,638 to Matsubara. Claim 11 was rejected under 35 U.S.C. § 103(a) as unpatentable over Matsubara in view of U.S. patent 5,554,566 to Lur et al. (herein "Lur"). Claim 12 was rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 5,702,986 to Mathews et al. (herein "Mathews") in view of U.S. patent 5,656,519 to Mogami. Claim 13 was rejected under 35 U.S.C. § 103(a) as unpatentable over Mathews in view of Mogami and further in view of Lur.

Addressing first the rejection of Claim 10 under 35 U.S.C. § 102(e) as anticipated by Matsubara, and the further rejection of Claim 11 further in view of Lur, those rejections are traversed by the present response.

It is initially noted that Claim 10 is amended by the present response to clarify the formation of a structure of the silicide film, by particularly reciting "wherein said silicide film has a smaller thickness and a height of said second side walls from said plane portion". That subject matter is fully supported by the original specification, for example in Figure 29 as a non-limiting example.

As shown in the non-limiting example of Figure 29 the height of the side wall 44 is greater than the thickness of the silicide film 45. Further, the specification indicates at page 22, line 17, to page 23, line 1, that such a structure "serves as increase of the widths of the silicide films 45" (specifically page 22, line 19). As also discussed in the specification, the silicide can be substantially lengthened due to the side wall 44, thereby causing the phase transition thereof and reducing gate resistance.

Such a structure as clarified in Claim 10 is believed to clearly distinguish over the applied art to Matsubara.

The Office Action cites the teachings of Matsubara in Figures 1D and 1E to meet the limitations of Claim 10. However, applicants note that in those Figures Matsubara does not disclose or suggest that the silicide film 109 has a smaller thickness than a height of the second side walls from a plane portion.

In such ways, amended independent Claim 10, and Claim 11 dependent therefrom, are believed to distinguish over the applied art.

Addressing now the rejection of Claim 12 under 35 U.S.C. § 103(a) as unpatentable over Mathews in view of Mogami, and the further rejection of Claim 13 further in view of Lur, those rejections are traversed by the present response.

Applicants respectfully submit that the outstanding rejection is not properly combining the teachings in Mathews and Mogami.

More specifically, and as recognized in the Office Action, “Mathews et al. does not teach that source/drain regions have a silicified surface”.¹

To overcome the recognized deficiencies in Mathews the outstanding Office Action cites the teachings in Mogami, particularly in Fig. 5F and with respect to source/drain regions 10, 11 having silicified surfaces 13b.²

In response to that basis for the outstanding rejection applicants note that in Figure 5D Mogami discloses an operation in which an implantation of As⁺ is effectuated to form silicide layers 13a, 13b. However, even if such teachings in Mogami are combined with the teachings in Mathews, the claimed invention is not realized.

More particularly, if the teachings in Mogami were combined with the teachings in Mathews, that would result in forming the silicide layer 12 on the gate electrode 11 in Mathew in a single operation. However, in Mathews the surface of the polycrystalline silicon

¹Office Action of October 23, 2003, page 4, line 11.

²Office Action of October 23, 2003, page 4, line 12-13.

layer 11 that is to become a gate electrode is silicified to provide layer 12 before doping source/drain impurities.

That is, when the teachings in Mogami are combined with those of Mathews, source/drain regions would not be silicified since source/drain regions would not exist in the device of Mathews at the time that the polycrystalline silicon layer 11 is to be silicified.

Stated another way, Mogami discloses only one operation of forming silicified layers, namely in Fig. 5D using an implantation of As^+ to form silicide layers 13a, 13b. That is the *only teaching* provided in Mogami for forming silicide layers 13a, 13b. When such teachings in Mogami are combined with the teachings of Mathews, that will not result in a device having silicified source/drain regions because source/drain regions do not exist in the device of Mathews at the time the polycrystalline silicon layer 11 is to be silicified.

The outstanding Office Action is apparently not fully and properly considering the actual teachings of Mogami and Mathews when making the combination of teachings.

Similar arguments as presented above were also set forth in the previous response. In response to those arguments, the outstanding Office Action states:

Applicants argue that the teachings of Mogami (the silicide layer on the source/drain region) can not incorporate into Mathews because these two references are using two different methods. In response, it is noted that this application is a device application and the patentability given to the structure limitation not method limitations, so one of ordinary skill in the [art] when incorporate[ing] the silicon layer on source/drain region of Mathews device could use any method and is not necessary using the method as taught by Mogami.³

The above-identified basis for the outstanding rejection is clearly improper. More specifically, the outstanding rejection is based on a combination of teachings of Mogami and Mathews. To state that one of ordinary skill in the art could use any method, and not necessarily that taught by Mogami, is clearly improper because it is the actual teachings of

³Office Action of October 23, 2003, page 5, prenumbered paragraph 3.

Mogami that are cited for the rejection. How is the applicant able to respond to a mythical rejection based on teachings other than those in Mogami when only the teaching in Mogami are cited? Such an interpretation of the teachings in Mogami is believed to be clearly improper.

Applicants also note that they are clearly arguing a device that would result in combining the teachings in Mathews and Mogami. Applicants are not arguing the method steps therein in isolation, but are looking at the device generated by combining the actual teachings in the references. It is only the actual teachings in the references that can be combined.

That is, what applicants argued is that when combining the teachings of Mathews and Mogami one must look at the methods they disclose therein to achieve the claimed structures. In other words, if one of ordinary skill in the art was to modify the teachings of Mathews in view of the teachings of Mogami with respect to forming source/drain regions, one of ordinary skill in the art would have to evaluate the process disclosed in Mogami of forming the source/drain regions, and evaluate whether that process could be employed in Mathews, and further evaluate what kind of structure would result from employing the process of forming source/drain regions as in Mogami in the device of Mathews.

Stated another way, the structures in both Mathews and Mogami are not created in a vacuum of the processes disclosed in those references. Instead, the structures disclosed in Mathews and Mogami result from the specific process operations to generate the structures. To ignore the specific process operations disclosed in Mathews and Mogami is improper.

If the outstanding Office Action is relying upon different teachings than those in Mogami, then further art must be cited to provide those different teachings. That is, it is improper to state that one of ordinary skill in the art could form source/drain regions in a way

other than taught by Mogami because the outstanding rejection is only based on the combination of teachings of Mathews in view of Mogami.


The teachings in the actual applied art cannot simply be ignored. If other teachings of forming a silicide layer on source/drain regions after forming a gate electrode structure are known, then those other teachings must be utilized in combination with the teachings of Mathews. However, it is improper to utilize the teachings of Mogami in combination with the teachings of Mathews and then indicate that alternate teachings than in Mogami are also possible when no prior art has been cited directed to those alternate teachings.

In such ways, applicants further respectfully submit that independent Claim 12, and Claim 13 dependent therefrom, also patentably define over the applied art.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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